

**Monthly Progress Report
Corrective Measures Study (CMS) for Potential Release Site (PRS) 16-021(c)
September 1999**

This report summarizes Los Alamos National Laboratory (LANL) activities that were completed during September of fiscal year (FY) 1999 on the CMS for PRS 16-021(c), the 260 outfall. Both the activities described in the CMS plan ([LA-UR-98-3918]) submitted to the New Mexico Environment Department-Hazardous and Radioactive Materials Bureau [NMED-HRMB] on 9/30/98 and approved by NMED-HRMB on 9/8/99) and other related activities are described here.

Description of Activities and Contacts

RCRA Facility Investigation (RFI) Report and CMS Plan— There was no new activity.

Best Management Practices (BMPs)—BMPs were inspected weekly during September. All of these BMPs including straw bales, diversion dams and diversion piping are designed to minimize run-on and runoff from the contaminated outfall area. A repair to the diversion pipe traversing the outfall area was completed.

CMS Hydrogeologic Investigations—CMS hydrogeologic investigations include ongoing Phase II RCRA Facilities Investigation (RFI) sampling as well as continuation of investigations outlined in the CMS plan.

The ongoing Phase II RFI sampling included sampling Sanitary Waste System Consolidation (SWSC), Burning Ground, and Martin Springs every other day for bromide, other anions, and stable isotopes. The analyses of the September sampling are in process. No new bromide breakthrough has been observed in samples to date. Wells, both alluvial and deep, were checked weekly for water level and presence of water. Four out of five alluvial wells contained water. The exception was alluvial well 2655, which is located in the steam plant drainage. None of the intermediate depth boreholes contained water.

Stable isotope investigations, as outlined in Section 6.3.2 of the CMS plan, were continued. In September, seven rainwater and runoff samples from precipitation events were collected. Eighty-six archived samples were analyzed for stable isotopes.

The transducers and automated data loggers that were installed at the three springs and in the alluvial boreholes appear to be producing good data for water level, temperature, and conductivity. Data from hand instruments for temperature and conductivity are consistent with the values measured using the automated data loggers.

Quarterly sampling was completed. This sampling included filtered and unfiltered samples at SWSC, Burning Ground and Martin springs, four alluvial wells, 90s Line Pond, and the headwaters of Canon de Valle. The confluence of Water Canyon and

Cañon de Valle and the confluence of Cañon de Valle and Fishladder Seep were dry. Results are pending.

Geomorphologic mapping in Canon de Valle and Martin Spring Canyon, as outlined in Section 6.3.5 of the CMS plan, was continued by the principal investigator, Steve Reneau of the Canyons Focus Area. Thirty laboratory samples were submitted for analysis.

The Deep Groundwater Addendum to the CMS plan was completed and submitted to NMED/HRMB on September 30 1999. Discussions were completed with the operating group at TA-15 about siting of the proposed well at TA-15, CdV-R-15-3. Preparations and contracting for field operations for this well were initiated. The decision was made to attempt to drill this borehole with mud.

Ecological Risk Pilot– Augmented the Phase II RFI data with sampling results for 1998 and the first quarter of 1999. These data include springs, alluvial wells and surface water. The ecological team is in the process of applying the “Screening Level Ecological Risk Assessment Methods” (April 1999) protocol to the updated data set. These results will be in an update to the RFI screening ecological risk assessment and include multi-media and single media screening assessments for soil, sediments and water. The ecological team is also in the process of evaluating the screening results to support the problem formulation for the Cañon de Valle ecological risk assessment.

CMS Bench and Pilot Studies–Bench and pilot studies continued in collaboration with the Innovative Treatment Remediation Demonstration (ITRD) program. The ITRD HE program is focused on two DOE sites: LANL and Pantex. Four studies are ongoing under the auspices of ITRD, all of which may benefit the PRS 16-021(c) CMS:

1. A study of the passive barrier technology of Stormwater Management, Inc., which is potentially useful for removing HE and barium from waters. Water from Canon de Valle is being used in the study.
2. A study of chemical treatment of HE-contaminated soil using zero-valent iron (ZVI). This is being completed by the University of Nebraska/H&H Ecosystems using PRS 16-021(c) soil. This soil was taken from a moderately contaminated location within PRS 16-021(c) and does not constitute a RCRA-regulated hazardous waste (based on results from laboratory analysis).
3. A study of anaerobic insitu bioremediation of HE using gas-phase carbon additions. This study is being completed by Idaho National Engineering and Environment Laboratory (INEEL), together with Texas Tech University, using Pantex soil and a Pantex field site.
4. A study of *ex-situ* anaerobic bioremediation of Pantex soils using the W. R. Grace process, which combines anaerobic bioremediation with a ZVI treatment.

Regarding the first study, LANL is waiting on feedback from NMED as to how to proceed with a pilot of the passive barrier technology.

Regarding the second study, the University of Nebraska/H&H Ecosystems study of ZVI remediation in building TA-16-224 was continued in September 1999. Samples from all six experiments were collected at 30, 40 and 60 days and submitted for screening analysis. Results from ten and twenty day laboratory analysis were received and the results look good for RDX and TNT but poor for HMX based on non-validated data.

Regarding the third and fourth studies, no new results were received.

Interim Measure (IM) – Weekly meetings were held to discuss IM Planning.

A meeting was held with ESA to resolve site access issues. Key issues included arrangement of weekend and night access; determination of areas requiring remote excavation; approval of equipment required for fieldwork; and potential use of an open burn/open detonation (OB/OD) unit for D003 soils. Final resolution on these issues has not been reached.

Preparations for IM fieldwork have begun. The Environmental, Safety and Health Identification (ESH-ID) paperwork was submitted to ESH-3. ESH-17 representatives met with high explosives production sites (HEPS) Team personnel to discuss possible air permitting issues associated with the IM. Preliminary feedback from ESH-20 suggested that NEPA issues would not be significant. The excavation permit is undergoing LANL review. The Site-Specific Health and safety plan (SSHASP) is completed in draft form. The Waste Characterization Strategy Form (WCSF) and Waste Analysis Plan (WAP) were completed and submitted for internal review.

LANL personnel continued to investigate using naturally occurring radioactive materials (NORM) and authorized limit determinations to expedite disposal of low-level uranium-contaminated soils.

A rough draft of the IM Plan was completed and was provided to HEPS Team members for review. Peer review is pending resolution of regulatory issues concerning contained in determinations and Temporary authorizations.

Public and Stakeholder Involvement– A tour for HEPS team members and other interested parties from within the ER Project and the DOE/OB was held.

Percentage of CMS Completed

LANL estimates that 30% of the CMS has been completed to date.

Problems Encountered/Actions to Rectify Problems

CMS Geohydrologic Investigations

Problem (1) ER Project personnel are still having difficulty installing flow-integrated samplers. A key part is still on back-order with the manufacturer.

Problem (2) The lack of a completed well at R-25 remains a significant concern to the TA-16-260 team.

Action to Rectify Problem (1): HEPS personnel have contacted the manufacturer and have requested expedited delivery of the part.

Action to Rectify Problem (2): The Canyons Team will try to successfully complete the well.

CMS Bench and Pilot Studies

No problems were identified this month.

IM

Problem (1) The operating group is not favorably disposed to using the OB/OD unit for D003 soils.

Action to Rectify Problem (1) Alternative paths forward for this waste are being investigated. One option may be shipment of the waste to the Lake Charles, Louisiana treatment, storage (TSD) facility, which may be permitted to treat D-003 explosive wastes. Another option may be soil blending.

Key Personnel Issues

There were no changes to the key personnel for the CMS project during this reporting period.

Projected Work for October 1999

RFI Report and CMS Plan

- No work is scheduled for this month

BMPs

- Inspection of existing BMPs following significant rain events will continue.

CMS Hydrogeologic Investigations

- Continued bromide sampling of springs.

- Weekly checking of water levels and presence of water in alluvial and deep wells.
- Deployment of flow-integrated ISCO samplers.
- Continued precipitation monitoring and sampling for stable isotopes.
- Verification that transducers deployed in the alluvial wells and springs are providing data that is consistent with hand-held instruments for water levels.
- Continuation of Canyons-type “reach investigations” in Martin Spring Canyon.
- Installation of alluvial well in Martin Spring Canyon.
- Contracting for field support for deep borehole CdV-R-15-3.
- Continuation of field logistics for deep borehole CdV-R-15-3.

Ecological Risk Pilot

- Continue the updated screening assessment and evaluation of the screening results.

CMS Bench and Pilot Studies

- Sampling the ZVI treatment test for performance at twenty-day intervals.
- Follow-up with NMED on discussion items from August 11, 1999 meeting in a meeting scheduled for October 14, 1999.
- An ITRD meeting is scheduled for October 7 and 8, 1999 at Pantex.

IM

- Completion of peer review draft of the IM plan (pending resolution of key regulatory issues).
- Resolution of IM issues with operating group.
- Completion of readiness review.

Public and Stakeholder Involvement

- HEPS team members will participate in quarterly review of Hydrogeologic Workplan on October 14, 1999.

- The HEPS Team Leader will present a talk on barium geochemistry and natural attenuation at the TIE meeting on October 26, 1999
- The HEPS Team Leader will present a talk on the hydrogeochemistry of TA-16 springs at the annual meeting of the Geological Society of America on October 27, 1999